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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,490	08/25/2006	Henry Azima	085874-0459	6294
22428 7590 03/13/2009 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
ROBINSON, RYAN C				
ART UNIT		PAPER NUMBER		
2614				
MAIL DATE		DELIVERY MODE		
03/13/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/584,490

**Applicant(s)**

AZIMA ET AL.

**Examiner**

RYAN C. ROBINSON

**Art Unit**

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date 6/22/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit **2614**.
2. This communication is responsive to the applicant's response/amendment filed on 1/5/2009.

***Specification***

3. The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. It is unclear, given

the structure recited in parent claims 1-3, how force can be applied to a lever in a direction normal to the plane of the panel if the exciter is simply coupled to a lever. Examiner suggests changing the dependency of allowable claim 11 on any one of claims 1 to 3, and changing the dependency of claim 10 on claim 11.

6. Claims 22 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. It is unclear, given the structure recited in parent claim 14-16, how force can be applied to a lever in a direction normal to the plane of the panel if the exciter is simply coupled to a lever. Examiner suggests changing the dependency of allowable claim 23 on any one of claims 14 to 16, and changing the dependency of claim 22 on claim 23.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**8. Claims 1-10, 12-21, 23, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graetz, U.S. Publication No. 2004/0240687, filed on 5/30/2003, (hereby Graetz), in view of Azima, U.S. Patent No. 6,332,029, published on 12/18/2001, (hereby Azima).**

9. As to claim 1, Graetz discloses a method of making a bending wave panel loudspeaker (Fig. 6), comprising: rigidly coupling a lever (62A, 62B) to a panel (69) marginal portion, and wherein the lever extends at an angle to the plane of the panel (the lever is perpendicular to the panel), coupling a bending wave exciter (61A, 61B) to the lever whereby bending wave energy is coupled to the panel (63) to provide an acoustic output when the exciter is fed with a signal (Para. 0024, lines 1-5)

It is noted that Graetz does not explicitly disclose that the lever coupling defines a region where a suspension can be attached, and supporting the panel on a suspension positioned outboard of the lever in said region with said suspension being adapted to provide boundary conditions which improve performance. However, Graetz does not limit the speaker to a particular type of suspension, and suspending a panel speaker on the edges is well known in the art. Azima teaches a similarly structured panel speaker (Fig. 6b) with a region where a suspension (17) can be attached, and the panel is supported on a suspension positioned in said region, with the suspension (17) being adapted to provide boundary conditions which improve performance (The suspension is made resilient; Col. 28, lines 35-38). Therefore, it would have been

obvious to suspend the panel, disclosed by Graetz, on the edges, as taught by Azima, to provide a suitable suspension for the panel.

10. As to claim 2, Graetz discloses arranging the lever (62B) to be in the form of a flange extending along a marginal portion of the panel (69).

11. As to claim 3, Graetz does not explicitly disclose how far along the marginal portion the flange extends. However Graetz does teach that the flange should be any suitable size to accommodate the exciter (Para. 0023, lines 5-8). Therefore, it would have been obvious to one of ordinary skill in the art to extend the flange over any length, including extending part-way along the marginal portion.

12. As to claim 4, with respect to claims 1-3, Graetz discloses arranging levers or flanges (62A, 62B) on a pair of opposite marginal portions of the panel, and coupling each lever or flange to a vibration exciter (61A, 61B) whereby the bending wave panel (69) can be operated as a stereo device.

13. As to claim 5, Graetz discloses arranging a lever or flange (62A) on an adjacent marginal portion of the panel (69), and coupling a vibration exciter (61A) to the lever or flange on the adjacent edge or marginal portion. It is noted that Graetz does not explicitly disclose the number of channels for acoustic output. However Graetz does teach that any number of exciters and brackets can be used (Para. 0027, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art to add additional exciters and levers or flanges on adjacent edges of the panel for the purpose of adding multiple channels of acoustic output.

14. As to claim 6, Graetz may not explicitly disclose driving the lever or the flange into resonance by the associated vibration exciter. However, Graetz does teach that the lever should be optimized for efficient energy transfer from the exciter (Para. 0025, lines 5-9), and one of ordinary skill would realize that driving the lever or flange into resonance is an ideal optimization for energy transfer.

15. As to claim 7, Graetz teaches selecting a distributed mode device as a vibration exciter (Para. 0026, lines 1-6).

16. As to claim 8, with respect to claims 1-3, Graetz discloses positioning the exciter (61A) inboard of the lever or flanges (62A).

17. As to claim 9, with respect to claims 1-3, Graetz teaches applying force to the lever or flange (62A) via the vibration exciter (61A) generally in the plane of the panel (The output surface of the exciter 61A points in a direction in the plane of the panel 63.)

18. As to claim 10, with respect to claims 1-3, Graetz teaches applying force to the lever or flange (62A) via the exciter generally normal to the plane of the panel (63) (The force is transferred to the lever; Para. 0031, lines 6-8).

19. As to claims 12 and 13, with respect to claims 1-3, Graetz teaches that the bending wave panel (63) is driven into resonance by the exciter, and the resonance is of a distributed mode kind. (Since the speaker is operating in distributed mode, the bending wave panel is inherently driven into resonance; Para. 0024, lines 3-5).

20. As to claim 14, Graetz teaches a bending wave panel-form loudspeaker (Fig. 6) having: a panel (63); a lever (62A) rigidly connected to a marginal portion of the panel, a vibration exciter (coupled to the lever to apply bending wave energy to the panel to produce an acoustic output.

It is noted that Graetz does not explicitly disclose that the lever coupling defines a region where a suspension can be attached, and supporting the panel on a suspension positioned outboard of the lever in said region with said suspension being adapted to provide boundary conditions which improve performance. However, Graetz does not limit the speaker to a particular type of suspension, and suspending a panel speaker on the edges is well known in the art. Azima teaches a similarly structured panel speaker (Fig. 6b) with a region where a suspension (17) can be attached, and the panel is supported on a suspension positioned in said region, with the suspension (17) being adapted to provide boundary conditions which improve performance (The



suspension is made resilient; Col. 28, lines 35-38). Therefore, it would have been obvious to suspend the panel, disclosed by Graetz, on the edges, as taught by Azima, to provide a suitable suspension for the panel.

21. As to claim 15, Graetz discloses that the lever (62B) is in the form of a flange extending along a marginal portion of the panel (69).

22. As to claim 16, Graetz does not explicitly disclose how far along the marginal portion the flange extends. However Graetz does teach that the flange should be any suitable size to accommodate the exciter (Para. 0023, lines 5-8). Therefore, it would have been obvious to one of ordinary skill in the art to extend the flange over any length, including extending part-way along the marginal portion.

23. As to claim 17, with respect to claims 14-16, Graetz discloses that levers or flanges (62A, 62B) are provided on opposite marginal portions of the panel, each lever or flange being coupled to a vibration exciter (61A, 61B) whereby the loudspeaker (60) can be operated as a stereo device.

24. As to claim 18, discloses a lever or flange (62A), provided on an adjacent marginal portion of the panel (69), and the lever or flange on the adjacent edge or marginal portion being coupled to a vibration exciter (61A). It is noted that Graetz does not explicitly disclose the number of channels for acoustic output. However Graetz does

teach that any number of exciters and brackets can be used (Para. 0027, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art to add additional exciters and levers or flanges on adjacent edges of the panel for the purpose of adding multiple channels of acoustic output.

25. As to claim 19, with respect to claims 14-16, Graetz may not explicitly disclose that the lever or the flange is adapted to be driven into resonance by the associated vibration exciter. However, Graetz does teach that the lever should be optimized for efficient energy transfer from the exciter (Para. 0025, lines 5-9), and one of ordinary skill would realize that driving the lever or flange into resonance is an ideal optimization for energy transfer.

26. As to claim 20, Graetz discloses that the vibration exciter is a distributed mode device (Para. 0026, lines 1-6).

27. As to claim 21, with respect to claims 14-16, Graetz discloses that the exciter (61A) is placed inboard of the lever or flanges (62A).

28. As to claim 23, with respect to claims 14-16, Graetz discloses that the vibration exciter is adapted to apply force to the lever or flange (62A) generally in the plane of the panel (63). (The output surface of the exciter 61A, points in a direction in the plane of the panel 63).

29. As to claims 25 and 26, with respect to claims 14-16, Graetz discloses that the bending wave panel is adapted to be resonant to produce an acoustic output, and the bending wave panel is of the distributed mode kind. (Since the speaker is operating in distributed mode, the bending wave panel is inherently driven into resonance; Para. 0024, lines 3-5)

30. As to claim 27, with respect to claims 14-16, Graetz discloses that the loudspeaker (Fig. 5) can be used with a display screen (Para. 0028, lines 15-17), wherein the transparent protective cover is a loudspeaker. Graetz also discloses that the panel area can be as small as 0.001 square meters (Para. 0022, lines 4-5), which would be suitable for use in a small electronic device.

31. As to claim 28, Graetz does not explicitly disclose that the device is a mobile telephone, PDA, or the like, however, examiner takes official notice that mobile telephones, and PDA's are all well known devices that incorporate a display screen, and further capable of integrating a loudspeaker as taught by Graetz.

***Allowable Subject Matter***

32. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the

indication of allowable subject matter: Claim 11 recites the unique limitation of a return lip on the end of the lever or flange remote from the panel.

33. Claim 22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

34. Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 24 recites the unique limitation of a return lip on the end of the lever or flange remote from the panel.

### ***Response to Arguments***

35. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record

- |    |                       |              |
|----|-----------------------|--------------|
| a. | US Publication Number | 2004/0240687 |
| b. | US Patent Number      | 6332029      |

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan C. Robinson whose telephone number is (571) 270-3956. The examiner can normally be reached on Monday through Friday from 9 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 2614

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan Robinson

/Suhan Ni/

Primary Examiner, Art Unit 2614